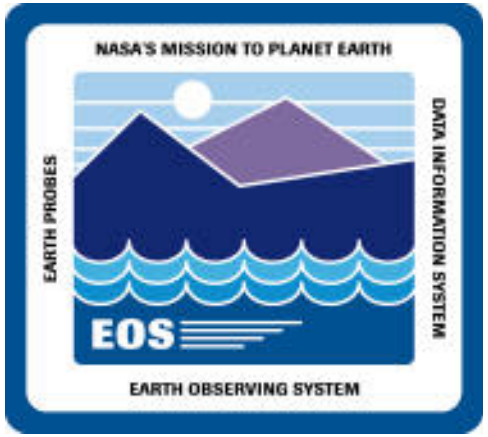


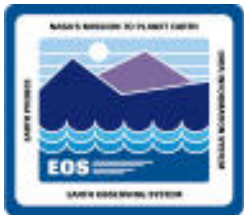

# CSS Services

## Keys Botzum

**kbotzum@eos.hitc.com**

**17 April 1996**

# Agenda



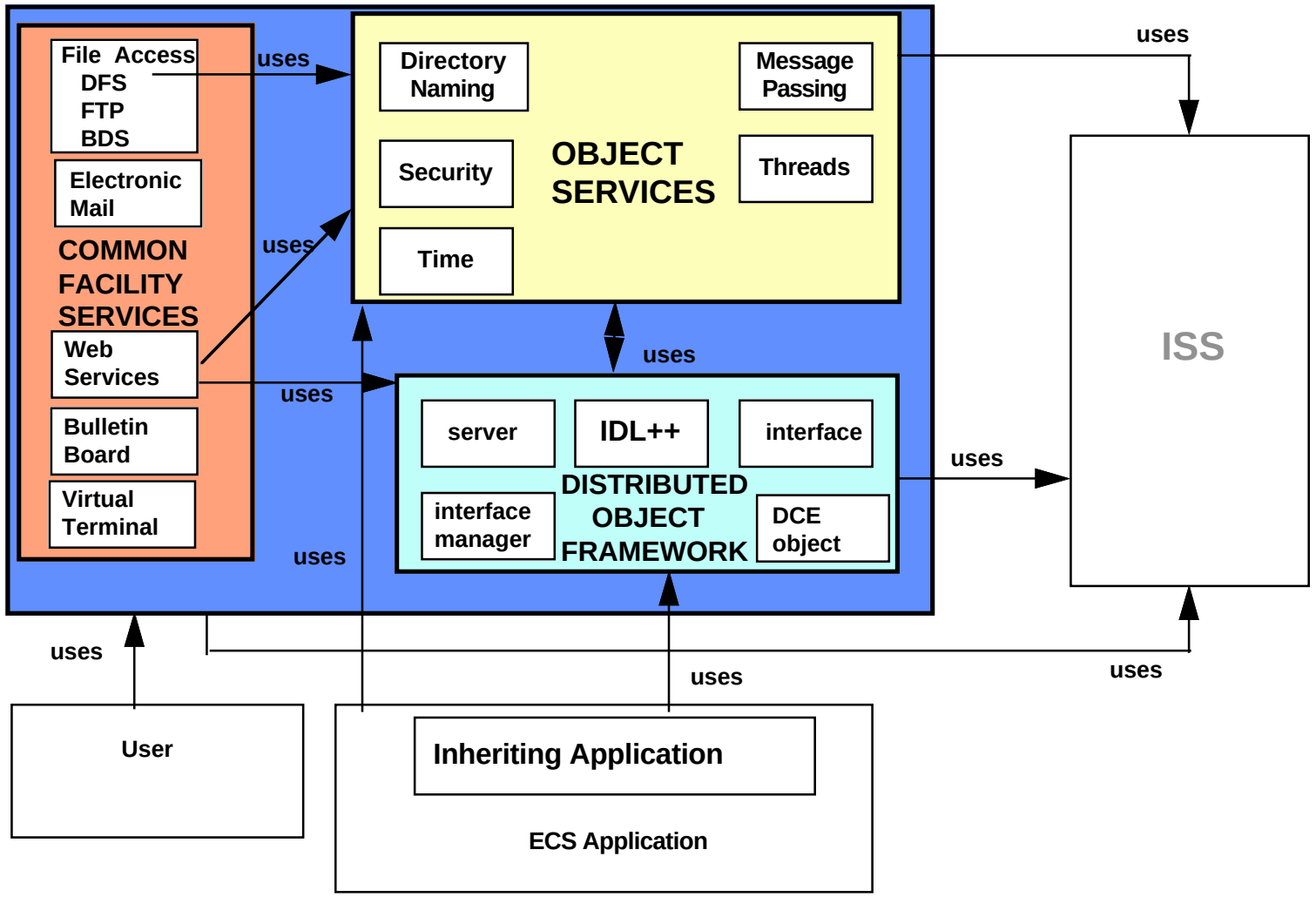

**CSS Services Overview**

**CSS Services Outline**

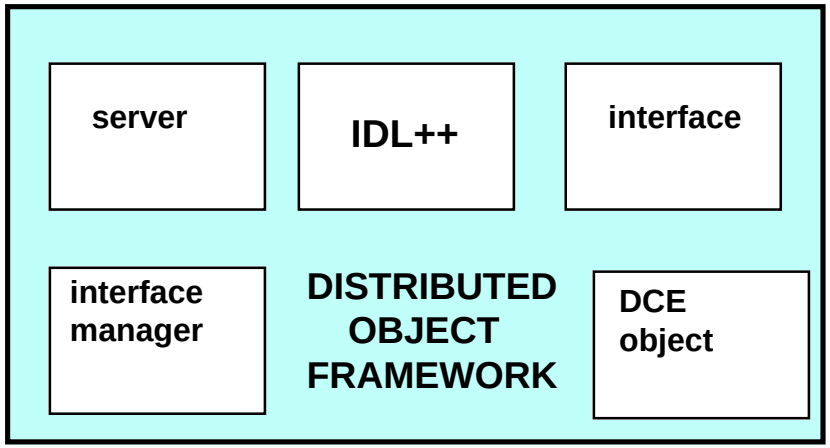
- **DOF**
- **Object Services**
- **Common Facilities**

**Details on What's New & Interesting Since Release A CDR**

# CSS Subsystem Design



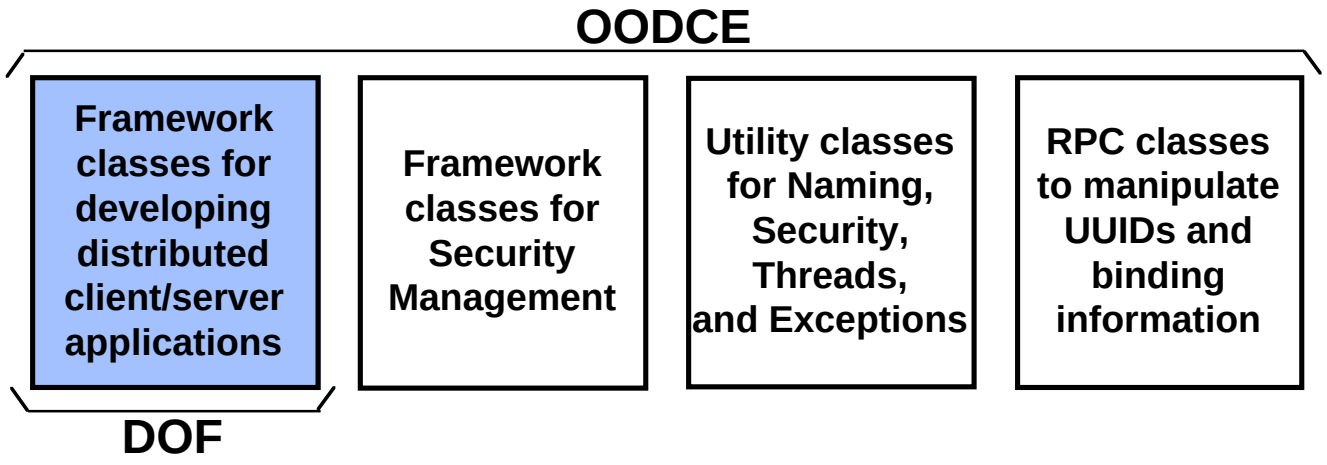
# CSS: Distributed Object Framework



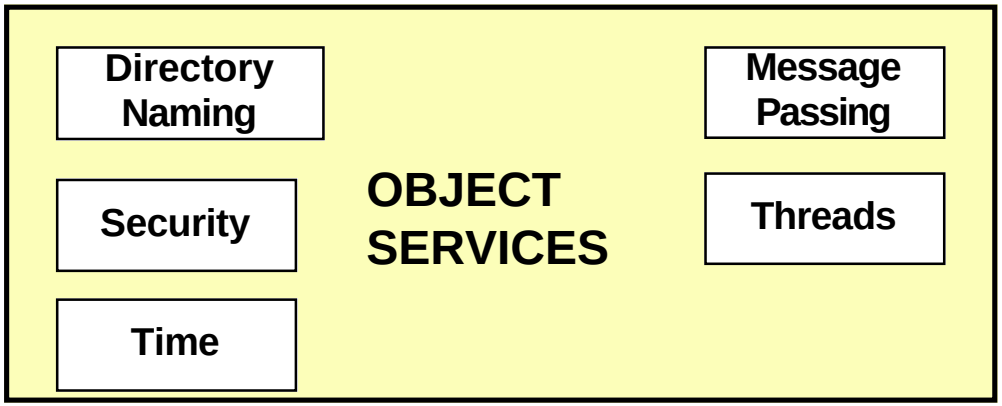

- **Facilitates the development of ECS client/server applications**
  - **Framework for creating remote objects and invoking remote methods**
  - **Provides an Abstract Interface to Services/Objects**
  - **Foundation for the Server Request Framework (SRF)**

# DOF Overview

- OODCE
  - Exposes DCE object model
  - Provides numerous useful utility classes
  - Integrates well with C++
- DOF is a subset of OODCE

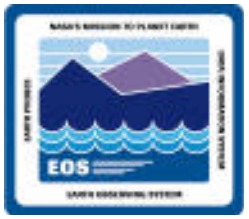


# CSS: Object Services




- **Object Services provide Enterprise-Wide Interoperable core services for Distributed Computing**

# Object Services Overview




## Security

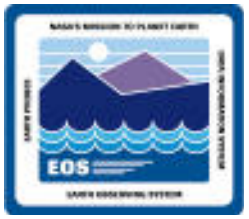
- DCE Security
- EcSeSecurity
  - Simplified interface to OODCE security
  - Encapsulated by Process Framework
  - Persistent, shared, centrally managed ACLs


## Naming

- DCE CDS
- Policy


  - Specifies modes (i.e. testing, operation) to allow concurrent systems to operate independently.
  - Covered in MSS presentation (Mode Management)
  - Encapsulated by Process Framework
  - Incorporated by Release A

# Object Services Overview




**Time**

- **DCE Time**
- **EcTiTimeService class**
  - **C++ interface to DCE utc_* functions**
  - **provides simulated time**
- **NASA-36 directly used as external time provider in addition to NTP** *New*

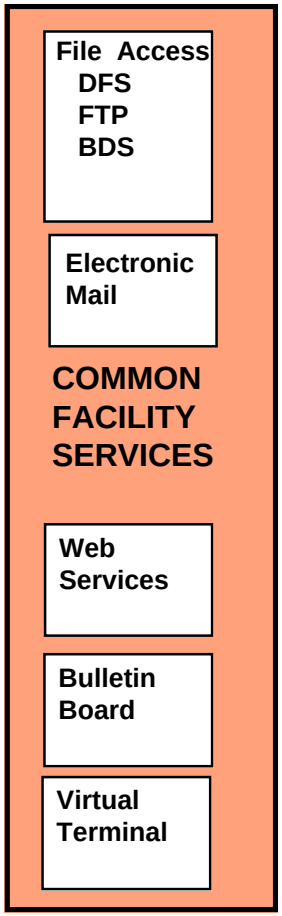
**Message Passing**

- **Custom developed**
  - **Provides asynchronous communication**
  - **Input/Output messages optionally stored persistently**
  - **Used by the Server Request Framework**

**Threads**

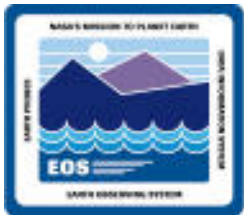
- **DCE Threads**
- **Utility classes that simplify the use of mutexes** *New*
  - **Autounlocking (EcPtUnlockingMutex)**
  - **Shared/Exclusive locking (EcPtSharedLock)**

# CSS: Common Facility Services




- **Common utilities classes and services that will be used by ECS applications**

# Common Facilities Overview



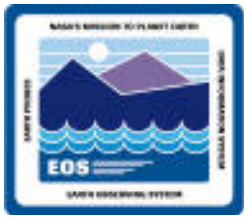

## E-Mail & Bulletin Board

- Interactive interfaces to e-mail and BBs messages (COTS)
- C++ classes for sending/posting messages (CsEmMailRelA, CsBBMailRelA) - “Mail Enabled applications”

## File Access

- FTP
  - Programmatic interface to FTP (CsFtFTPRelB)
  - Encapsulated by Process Framework
- Big Data Service *New*
  - Transfer large amounts of data at high speeds (over HiPPI)
- DFS *New*
  - Will be used in Release B
  - SDPS will use DFS

# Common Facilities Overview




**Web Server**

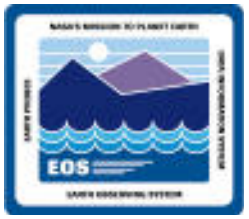
- **COTS Web server with SSL security**


**Virtual Terminal**

- **Interfaces for interactive sessions**
- **kftp/ktelnet**
  - **Secure ftp and telnet for ECS users, SSI&T, SCFs, etc**
  - **Based on krb5b5 w/ Argonne Lab patches**
  - **Will consider COTS if available when Release B deploys**

    **DCE 1.2.2 will contain DCE-ized telnet & ftp**

# Selected Detail




**Detail on**


- **Shared ACL Design**
- **Big Data Service (BDS)**
- **DFS**

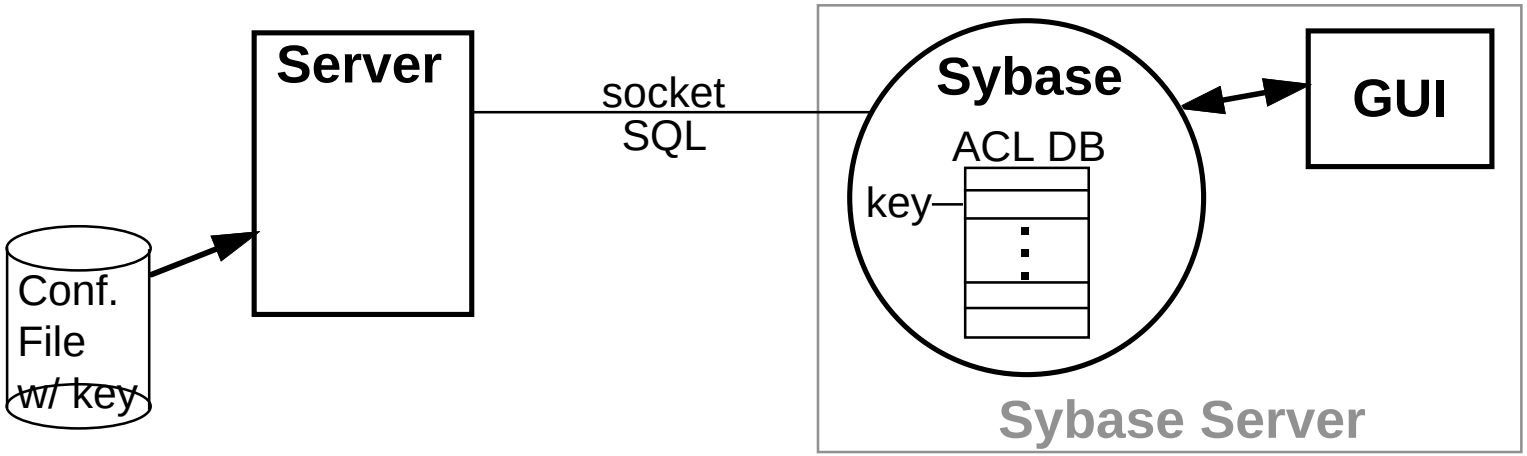
# Shared ACL Design

**Why**

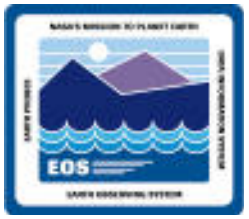
- **Storing ACLs centrally by site eases management**

**Design**

- **A database key is used to retrieve the ACLs for a specific server**
- **A server learns its key from a configuration file**
- **The database is polled hourly for changes to the ACLs**



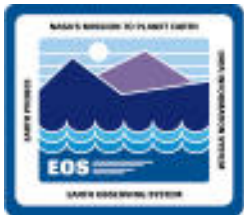
# Shared ACL Design




**Network Security**

- **The link between a remote server and the Sybase server uses DBMS security**
- **Remote servers only have read privileges to the Sybase server**
- **All changes to the ACL database must occur through the provided GUI which exists only on the Sybase server**
- **Port based filtering done at DAAC boundaries**

# Big Data Service




## Context

- Used between Processing and Data Server
  - high-speed data transfer need for Release B
  - SGI only
  - Dedicated HiPPI link
- Trade off study indicates that BDS is faster than ftp
- Detailed information will be presented by MRS (hardware sizing presentation)

## Status

- SGI only - beta now, GA Q3 ‘96
- will sell reference port
- Development
  - investigating common API for file transfer (ftp and BDS)

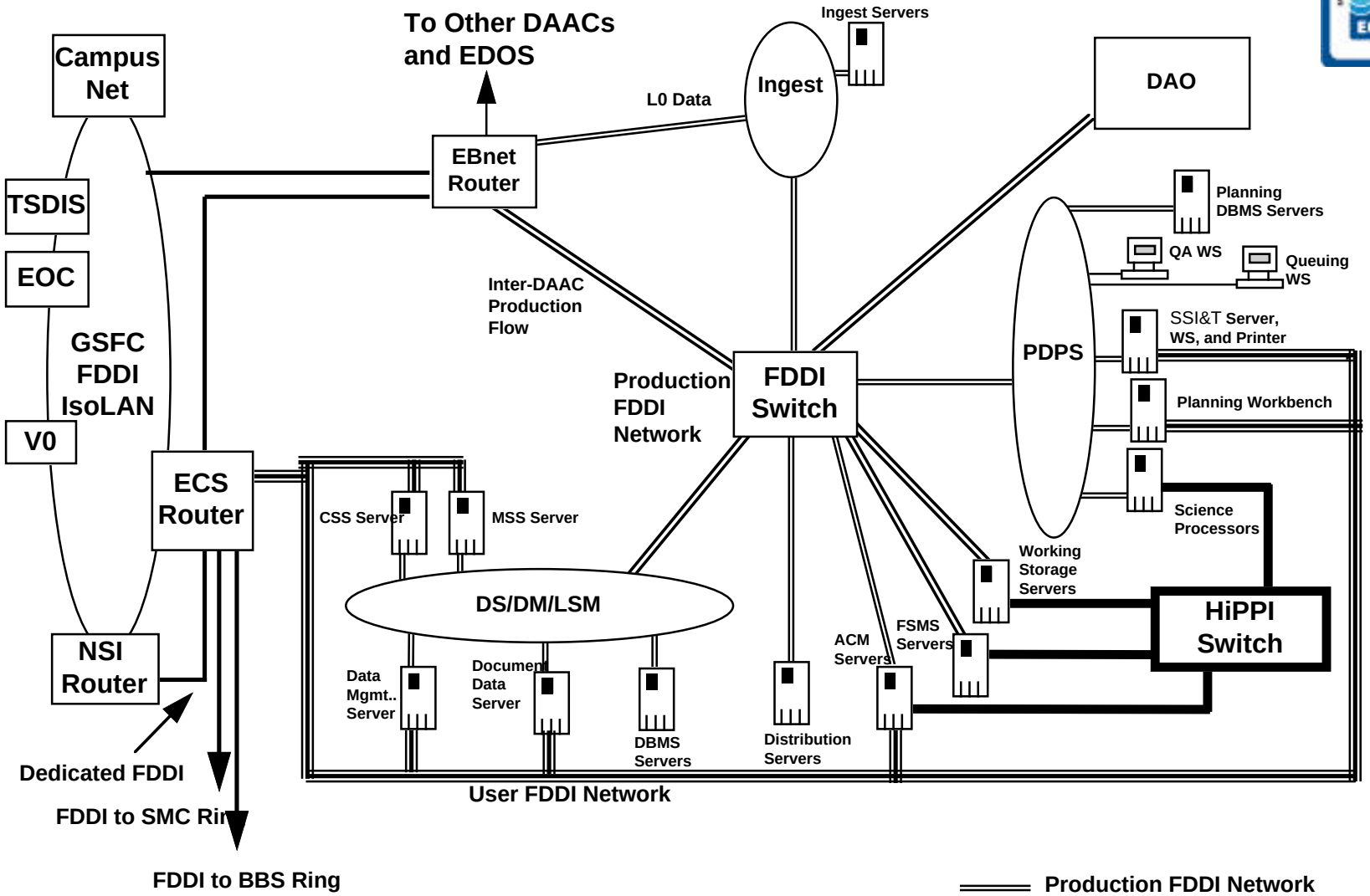
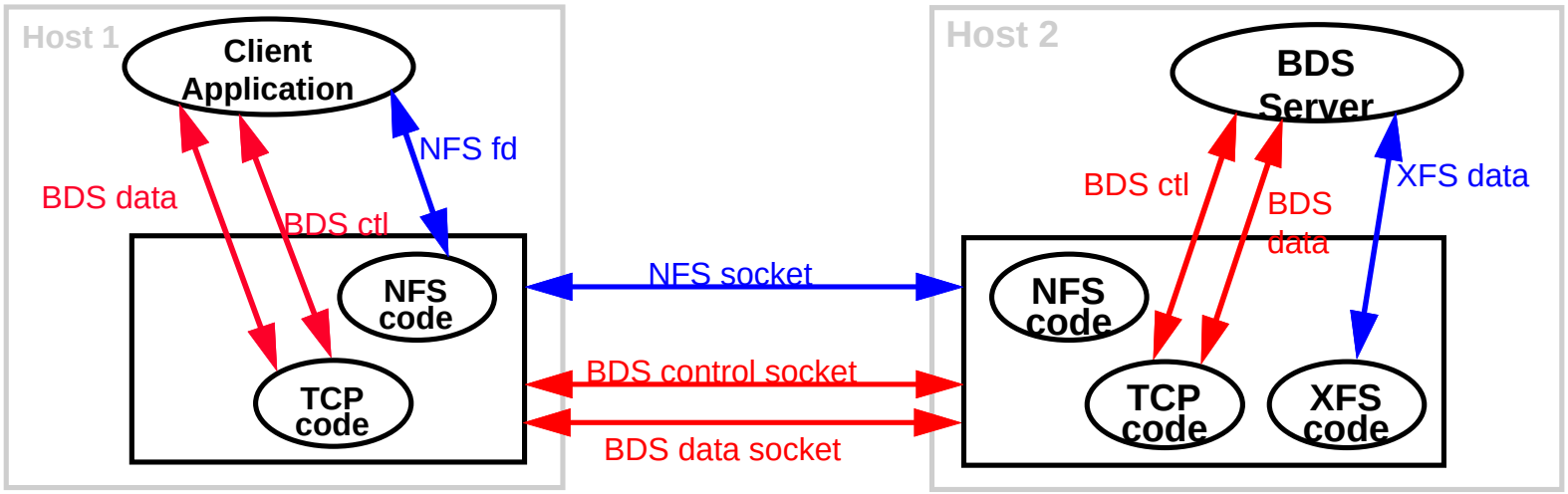



**Figure 3.4.1-1 GSFC DAAC LAN Topology**

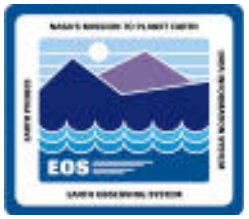
# Big Data Service




**A software enhancement to NFS protocol**

- **Designed by SGI**
- **Transfers megabytes of data very fast**
  - **10 to 20x NFS v.2 (60MB/s)**
  - **faster than ftp**
- **Transparent to application (looks like NFS)**

# DCE DFS




## Shared filesystems

- simplify application design & system administration
- Release B will be using DFS as the shared filesystem
  - DFS is tightly integrated with DCE Security
  - Consistent with ECS security policies

## Context

- DFS used where high performance is not required
- Processing will use for inter-DAAC transfers
- Also considering using DFS for
  - shared config files
  - common binaries, libraries, etc.

## DFS evaluation

- Measure performance
- Reliability/failover